

Fig. 1

Fig.2

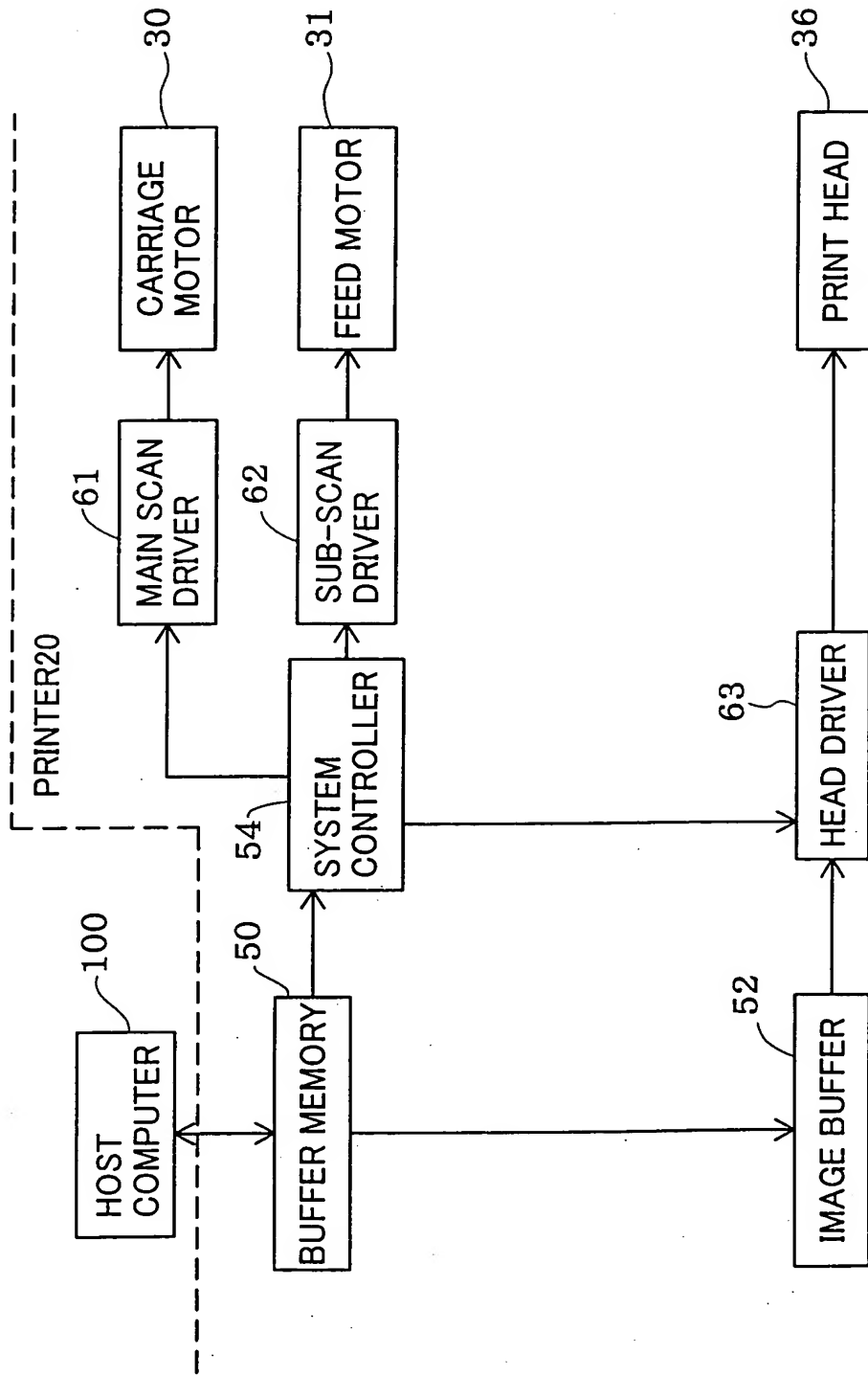


Fig. 3

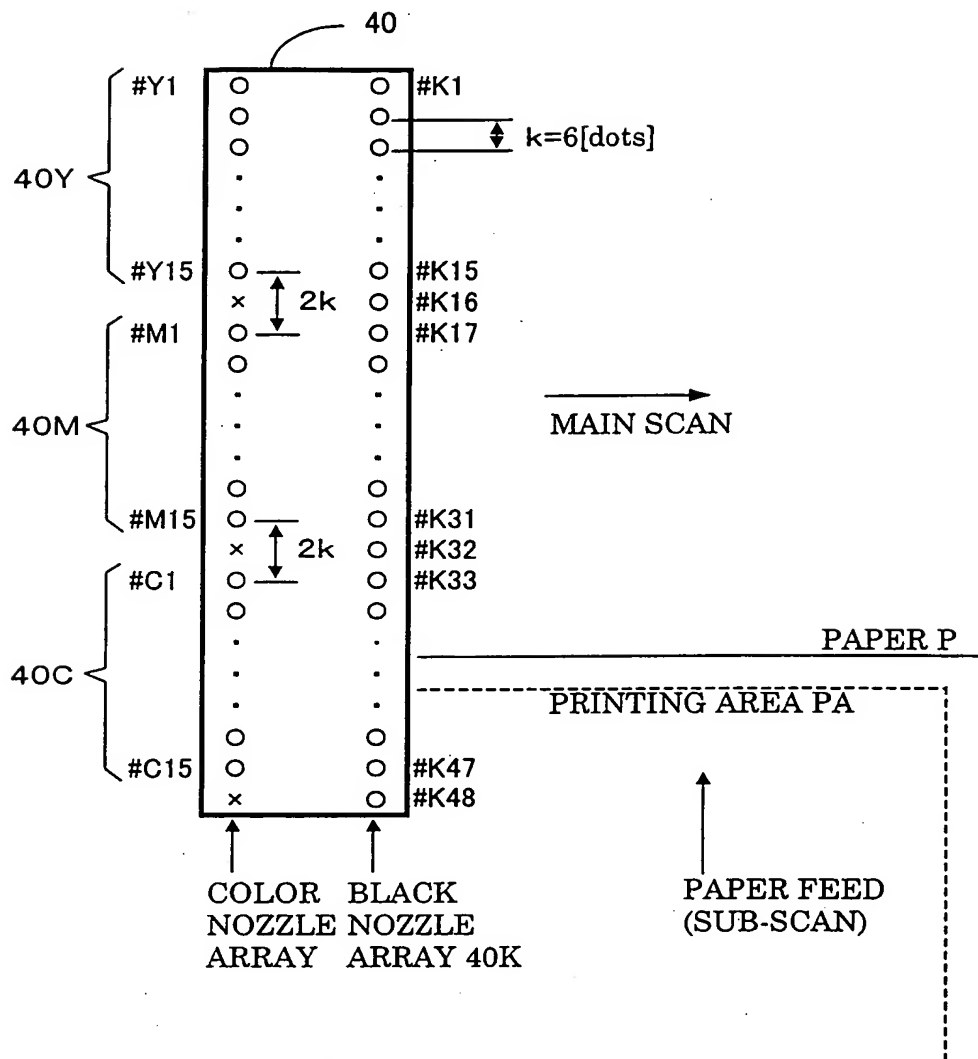


Fig. 4 (A) CONCEPT OF SUB-SCAN FEED(s=1)

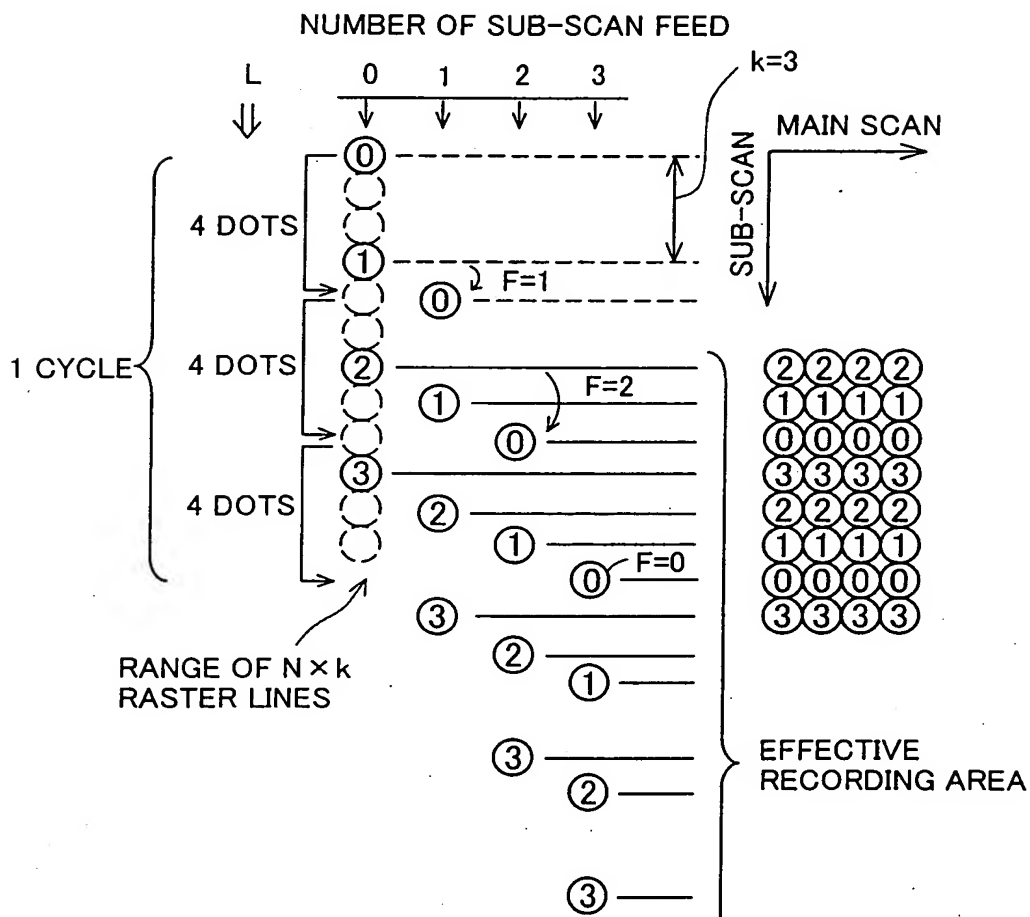


Fig. 4 (B) PARAMETERS

NOZZLE PITCH  $k$  : 3 [dot]  
 NUMBER OF USED NOZZLES  $N$  : 4  
 NUMBER OF SCAN REPEATS  $s$  : 1  
 NUMBER OF EFFECTIVE NOZZLES  $N_{eff}$  : 4

NUMBER OF SUB-SCAN FEED	0	1	2	3
FEED AMOUNT $L$ [dot]	0	4	4	4
$\sum L$	0	4	8	12
$F = (\sum L) \% k$	0	1	2	0

Fig. 5 (A) CONCEPT OF SUB-SCAN FEED(s=2)

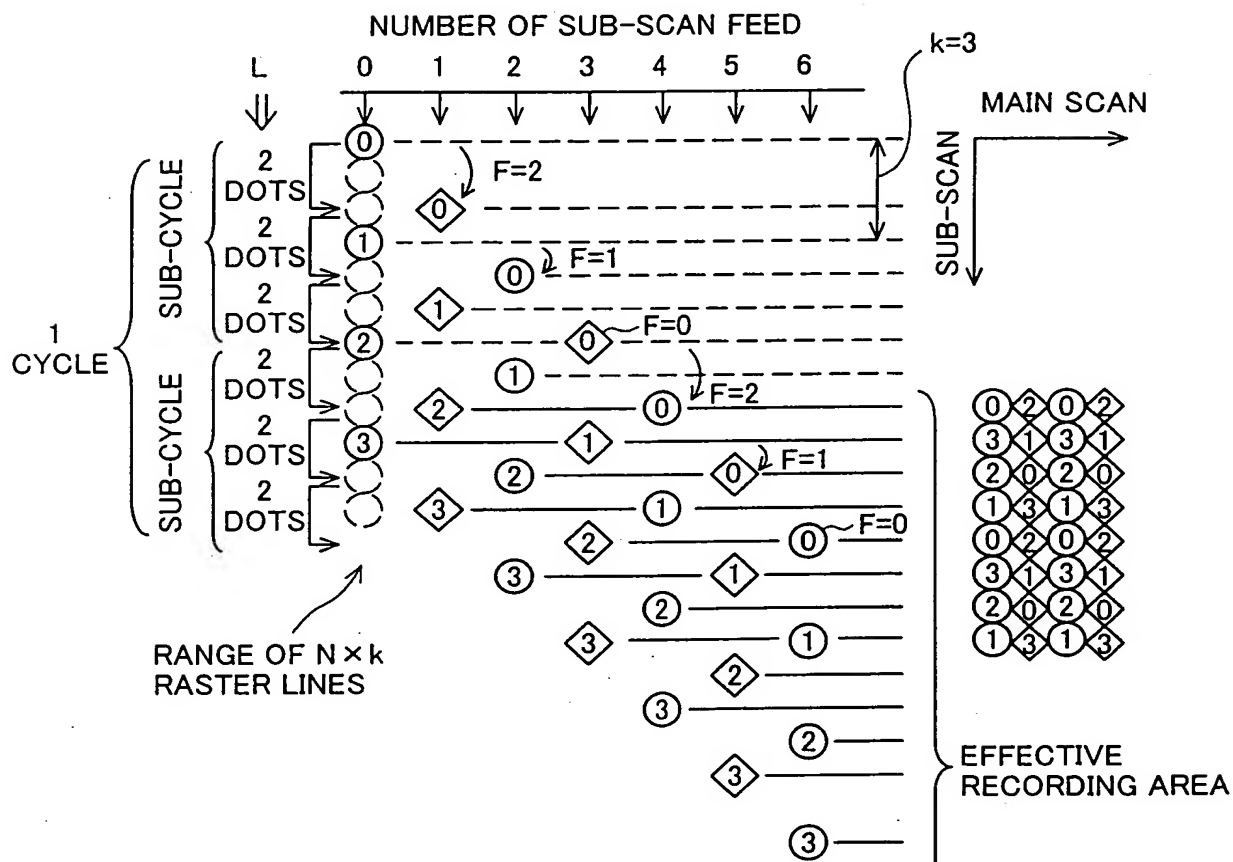


Fig. 5 (B) PARAMETERS

NOZZLE PITCH k : 3 [dot]  
 NUMBER OF USED NOZZLES N : 4  
 NUMBER OF SCAN REPEATS s : 2  
 NUMBER OF EFFECTIVE NOZZLES Neff : 2

NUMBER OF SUB-SCAN FEED	0	1	2	3	4	5	6
FEED AMOUNT L [dot]	0	2	2	2	2	2	2
$\sum L$	0	2	4	6	8	10	12
$F = (\sum L) \% k$	0	2	1	0	2	1	0

Fig. 6

SCAN PARAMETERS IN FIRST EMBODIMENT

Nozzle pitch :  $k = 6$  [dots]

Number of scan repeats :  $s = 1$

Number of working nozzles :  $N = 13$

Number of effective nozzles :  $N_{eff} = 13$

PASS No.	1	2	3	4	5	6	7
SUB-SCAN No.	0	1	2	3	4	5	6
FEED L [dots]	0	13	13	13	13	13	13
$\Sigma L$	0	13	26	39	52	65	78
$F = (\Sigma L) \% k$	0	1	2	3	4	5	0

Fig. 7

WORKING NOZZLES IN FIRST EMBODIMENT

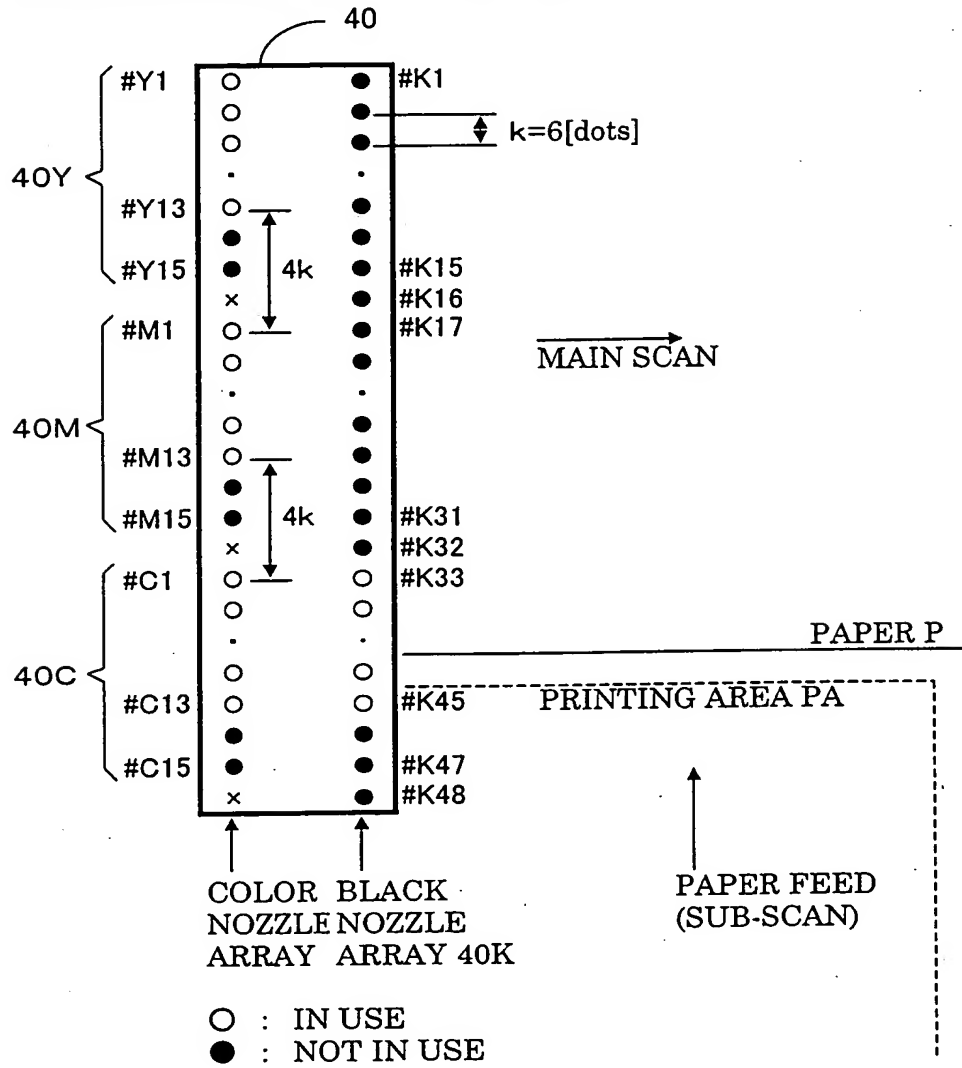


Fig. 8

FIRST EMBODIMENT

RASTER

LINE

PASS No.

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	C11						M1						M1					Y4	
2		C9					M12							M1					Y2
3			C7					M10							Y13				
4				C5					M8						Y11				
5					C3					M6						Y9			
6						C1					M4						Y7		Cmis
7	C12												M2					Y5	Mmis
8		C10						M13						x					Y3
9			C8						M11										Y1 Ymis
10				C6						M9					Y12				
11					C4						M7					Y10			
12						C2						M5					Y8		Cmis
13	C13						x						M3					Y6	
14		C11												M1					Mmis
15			C9						M12										Y2 Ymis
16				C7						M10					Y13				
17					C5						M8					Y11			
18						C3						M6					Y9		
19							C1						M4					Y7	
20		C12											M2					Y5	
21			C10						M13					x					Y3
22				C8						M11									Y1
23					C6						M9					Y12			
24						C4						M7					Y10		
25							C2						M5					Y8	
26		C13						x						M3				Y6	
27			C11							M12					M1				Y4
28				C9							M10								Y2
29					C7							M8				Y13			
30						C5							M6				Y11		
31							C3							M4				Y9	
32								C1							M2				Y7
33		C12								M13								Y5	
34			C10								M11					x			Y3
35				C8							M9								Y1
36					C6							M7					Y12		
37						C4							M5					Y10	
38							C2							M3				Y8	
39		C13						x							M1				Y6
40			C11													M1			Y4

Fig. 9

WORKING NOZZLES IN FIRST COMPARATIVE EXAMPLE

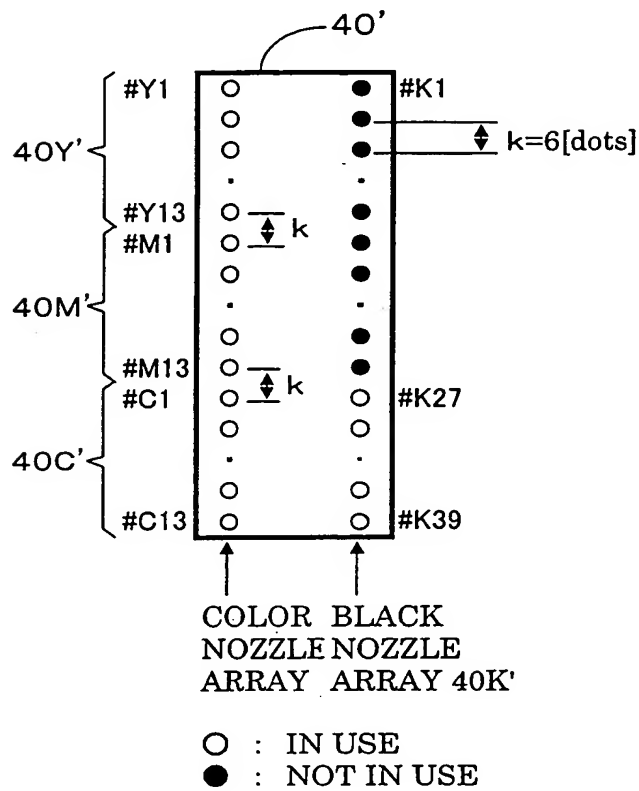


Fig. 10

FIRST COMPARATIVE EXAMPLE

RASTER  
 LINE

PASS No.

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	C11					M11						Y11							
2		C9					M9						Y9						
3			C7					M7						Y7					
4				C5					M5						Y5				
5					C3					M3						Y3			
6						C1					M1						Y1	Cmis, Mmis, Ymis	
7	C12					M12						Y12							
8		C10					M10						Y10						
9			C8					M8						Y8					
10				C6					M6						Y6				
11					C4					M4						Y4			
12						C2					M2						Y2	Cmis, Mmis, Ymis	
13	C13					M13						Y13							
14		C11					M11						Y11						
15			C9					M9						Y9					
16				C7					M7						Y7				
17					C5					M5						Y5			
18						C3					M3						Y3		
19							C1					M1						Y1	
20		C12					M12						Y12						
21			C10					M10						Y10					
22				C8					M8						Y8				
23					C6					M6						Y6			
24						C4					M4						Y4		
25							C2					M2						Y2	
26		C13					M13						Y13						
27			C11					M11						Y11					
28				C9					M9						Y9				
29					C7					M7						Y7			
30						C5					M5						Y5		
31							C3					M3						Y3	
32								C1					M1						Y1
33		C12						M12						Y12					
34			C10						M10						Y10				
35				C8						M8						Y8			
36					C6						M6						Y6		
37						C4						M4						Y4	
38							C2						M2						Y2
39		C13						M13						Y13					
40			C11						M11						Y11				

Fig. 11

EQUIVALENT NOZZLE POSITIONING

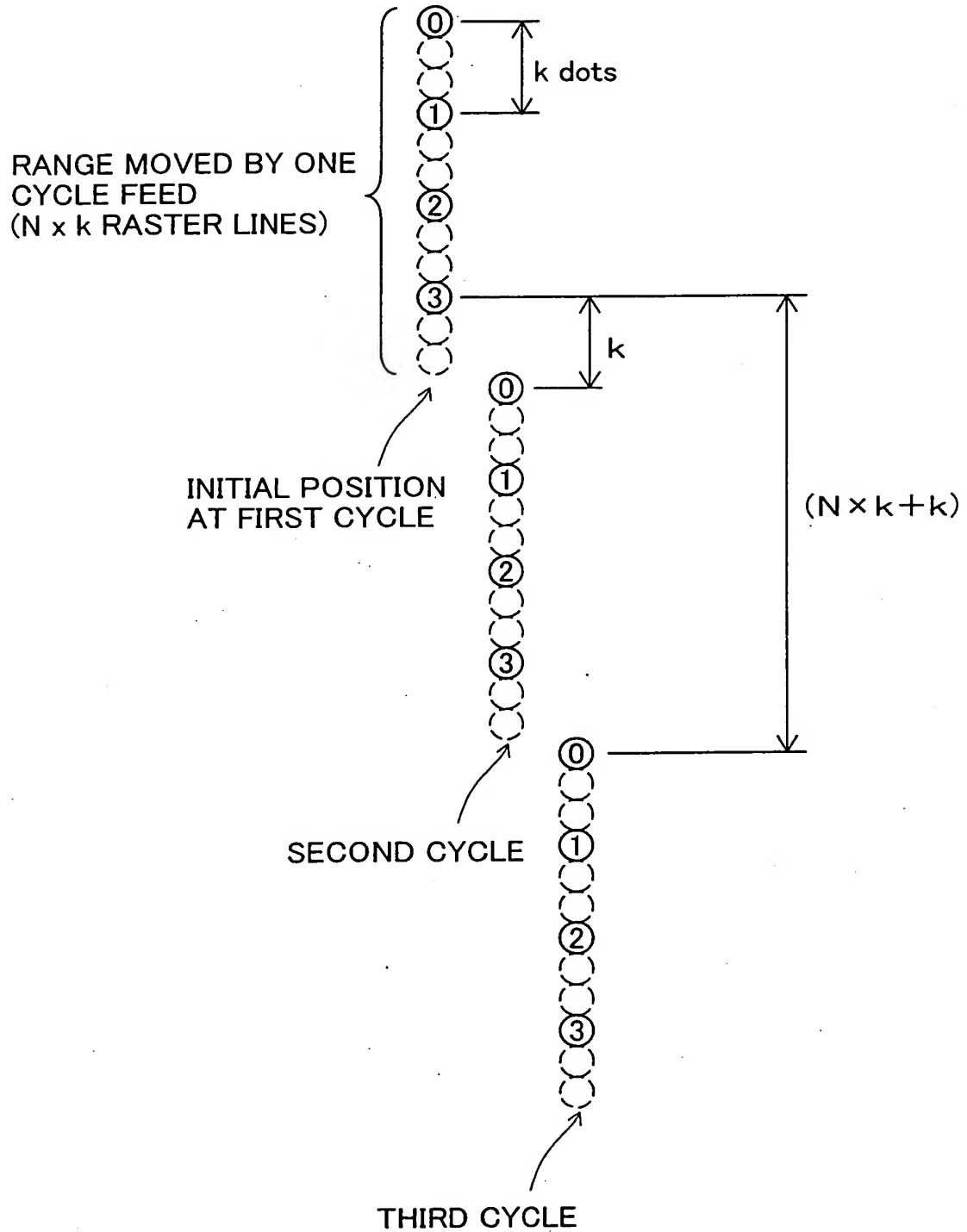


Fig. 12

SCAN PARAMETERS IN SECOND EMBODIMENT

Nozzle pitch :  $k = 6$  [dots]

Number of scan repeats :  $s = 1$

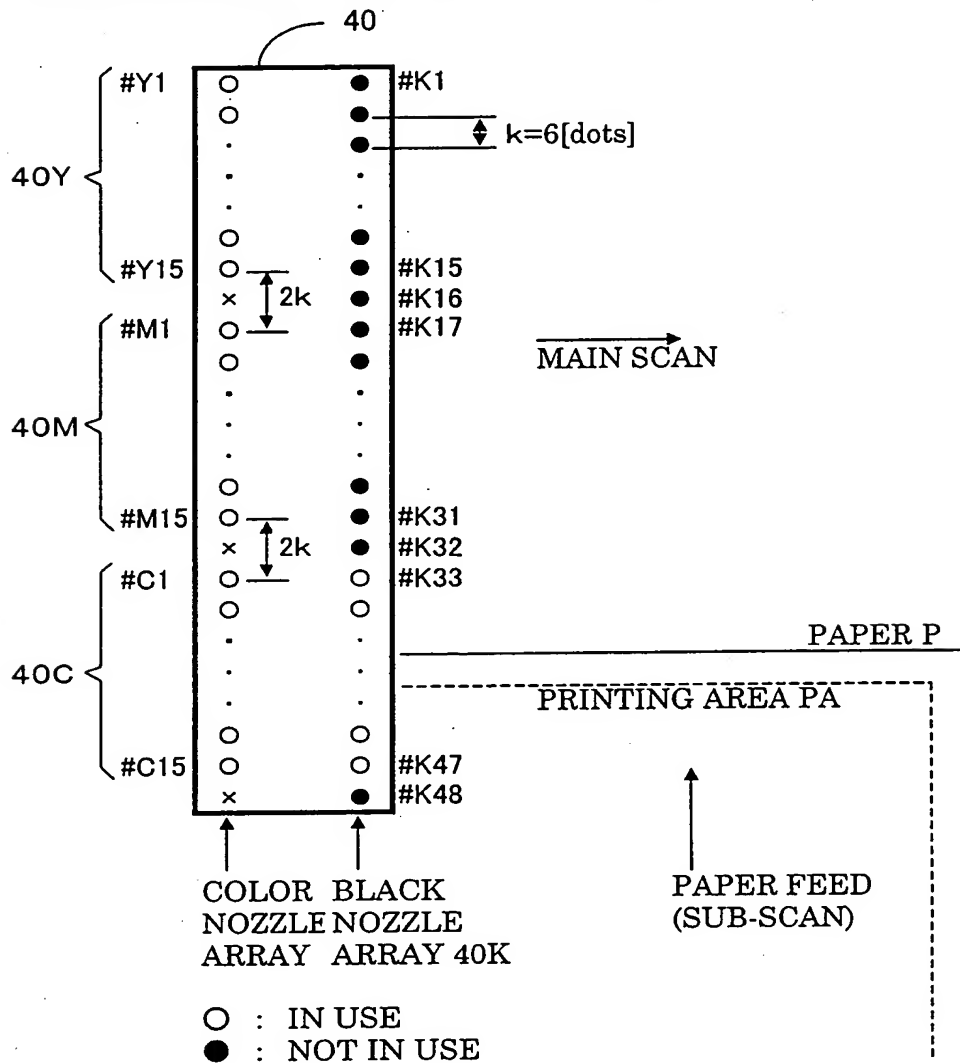
Number of working nozzles :  $N = 15$

Number of effective nozzles :  $N_{eff} = 15$

PASS No.	1	2	3	4	5	6	7
SUB-SCAN No.	0	1	2	3	4	5	6
FEED L [dots]	0	14	15	16	16	15	14
$\Sigma L$	0	14	29	45	61	76	90
$F = (\Sigma L) \% k$	0	2	5	3	1	4	0

Fig. 13

WORKING NOZZLES IN SECOND EMBODIMENT

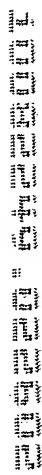


RASTER  
LINE

## PASS No.

LINE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1			C8						M9						Y10				
2	C13						M14						Y15						Cmis, Mmis, Ymis
3				C3						M4							Y5		
4		C11					M12						Y13						
5				C6					M7							Y8			
6					C1					M2								Y3	
7			C9					M10						Y11					Ymis
8	C14					M15						x						Y1	Cmis, Mmis
9				C4					M5							Y6			
10		C12					M13						Y14						
11				C7				M8							Y9				
12					C2					M3							Y4		
13			C10				M11						Y12						Mmis, Ymis
14	C15					x					M1							Y2	
15				C5					M6							Y7			
16		C13					M14						Y15						
17				C8				M9							Y10				
18					C3					M4							Y5		
19			C11				M12						Y13						Cmis, Mmis, Ymis
20					C1					M2								Y3	
21				C6					M7							Y8			
22							M15						x					Y1	
23				C9				M10						Y11					
24					C4					M5							Y6		
25			C12				M13						Y14						
26					C2					M3								Y4	
27				C7					M8							Y9			
28							x						M1					Y2	
29			C10					M11						Y12					
30				C5					M6								Y7		
31			C13				M14						Y15						
32					C3					M4								Y5	
33				C8				M9							Y10				

## WORKING NOZZLES IN SECOND COMPARATIVE EXAMPLE



## SECOND COMPARATIVE EXAMPLE

[illegible]

Fig. 17

FIRST ACTUATOR VARIATION

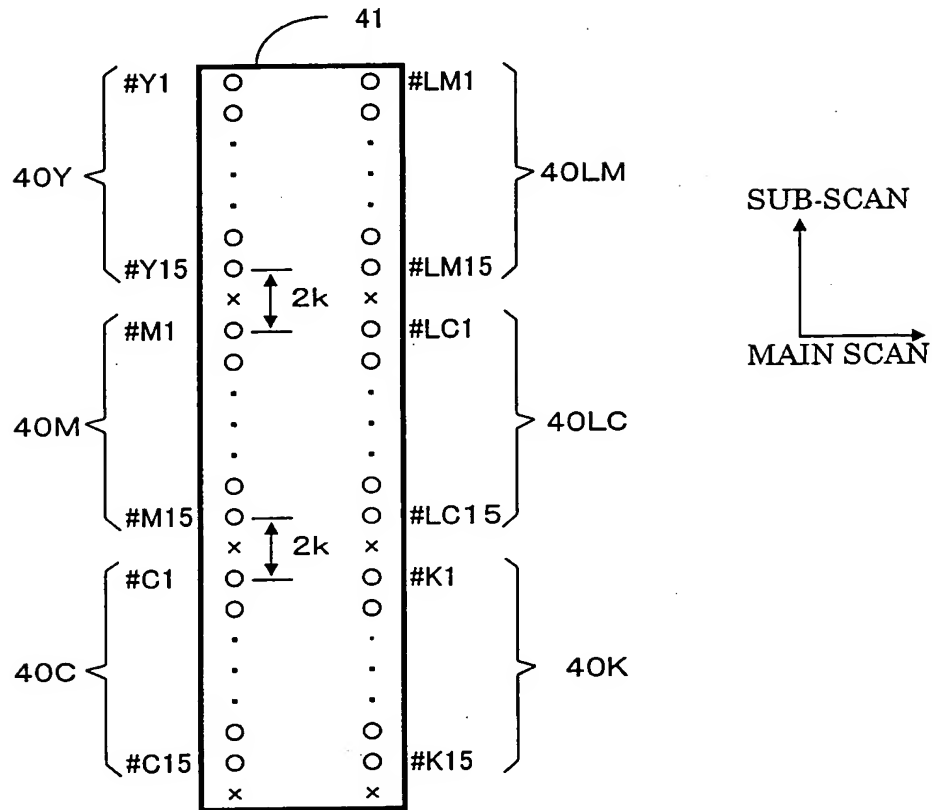


Fig. 18

SECOND ACTUATOR VARIATION

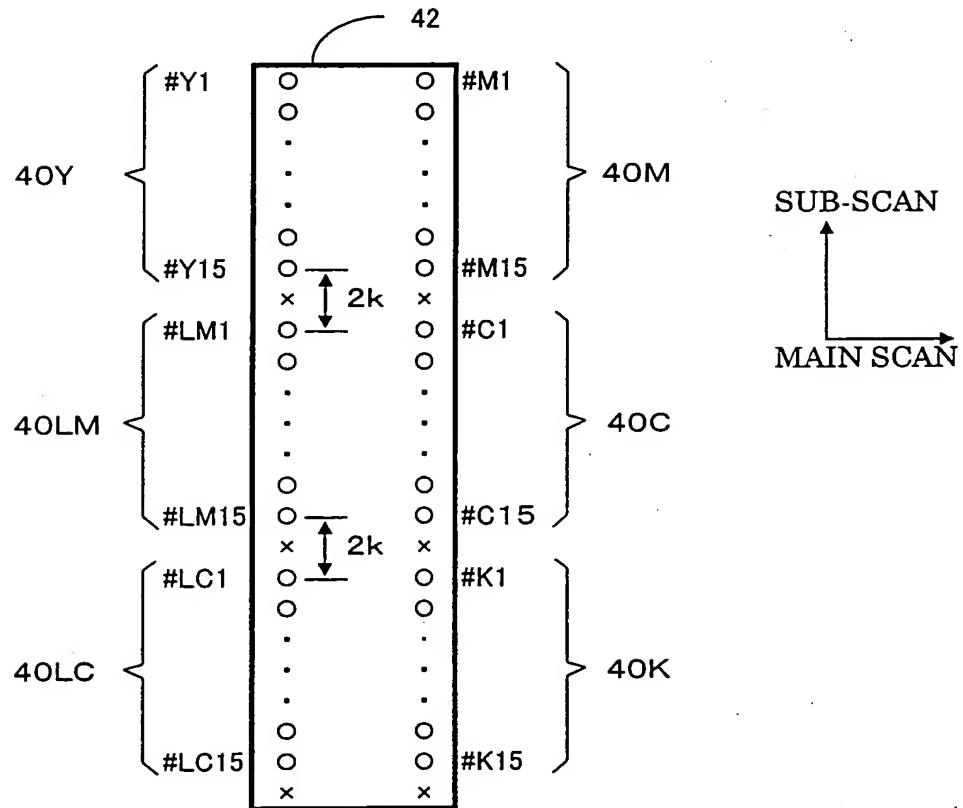


Fig. 19

THIRD ACTUATOR VARIATION

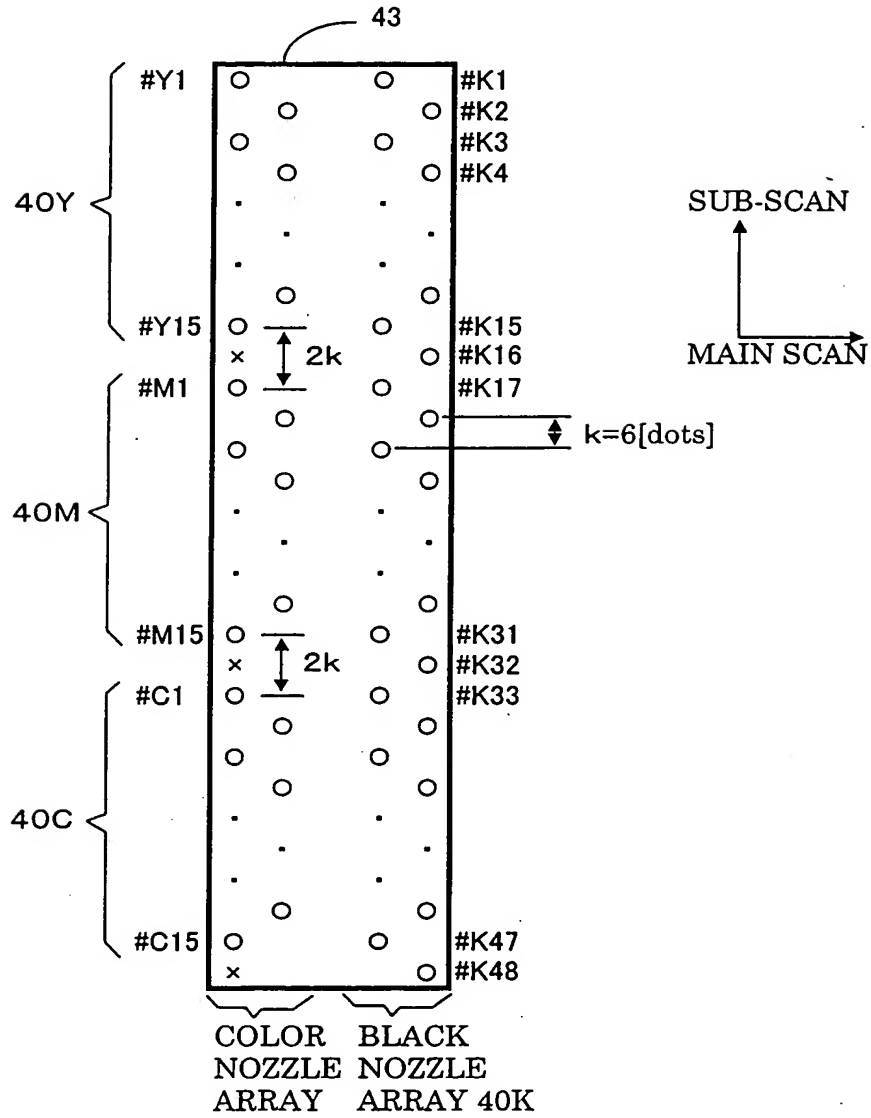


Fig. 20

FOURTH ACTUATOR VARIATION

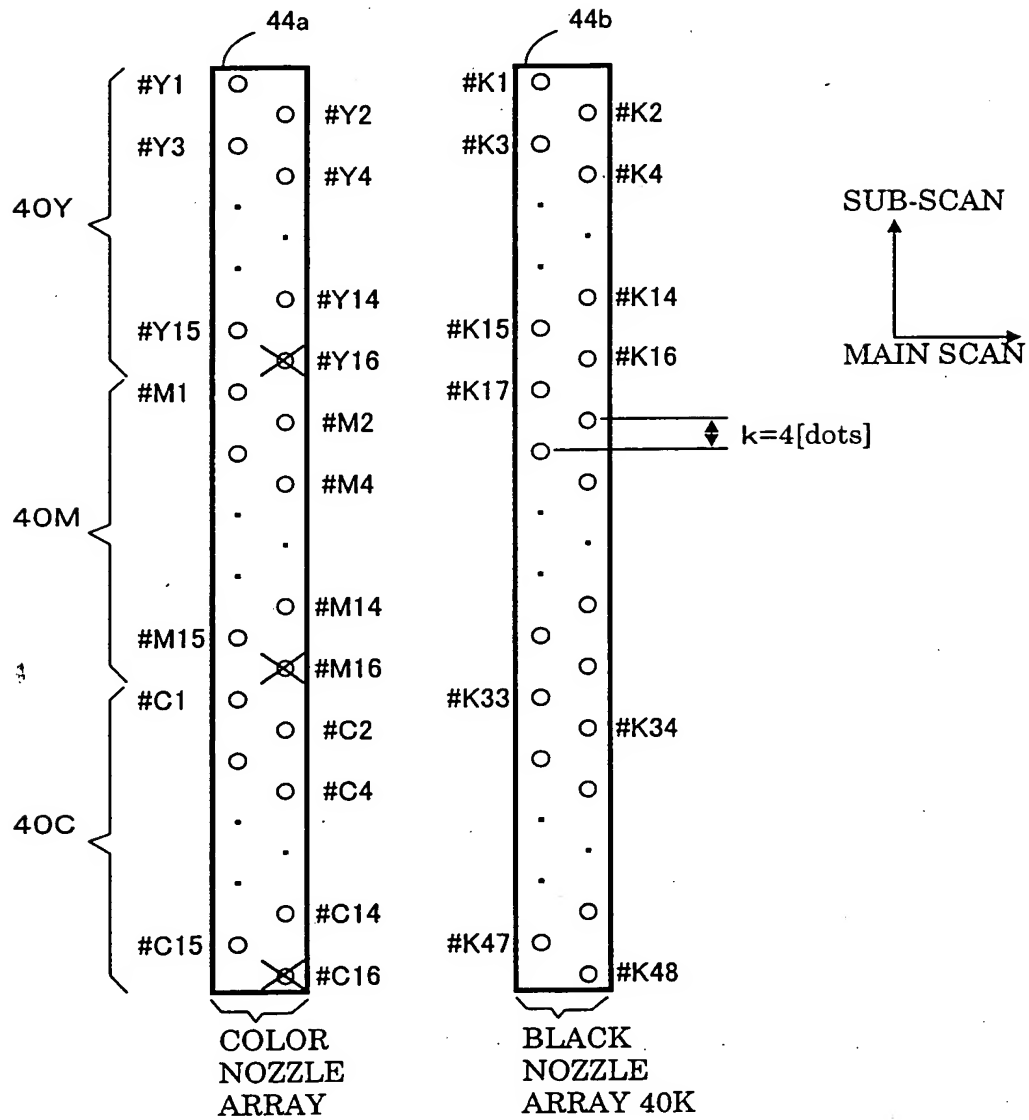
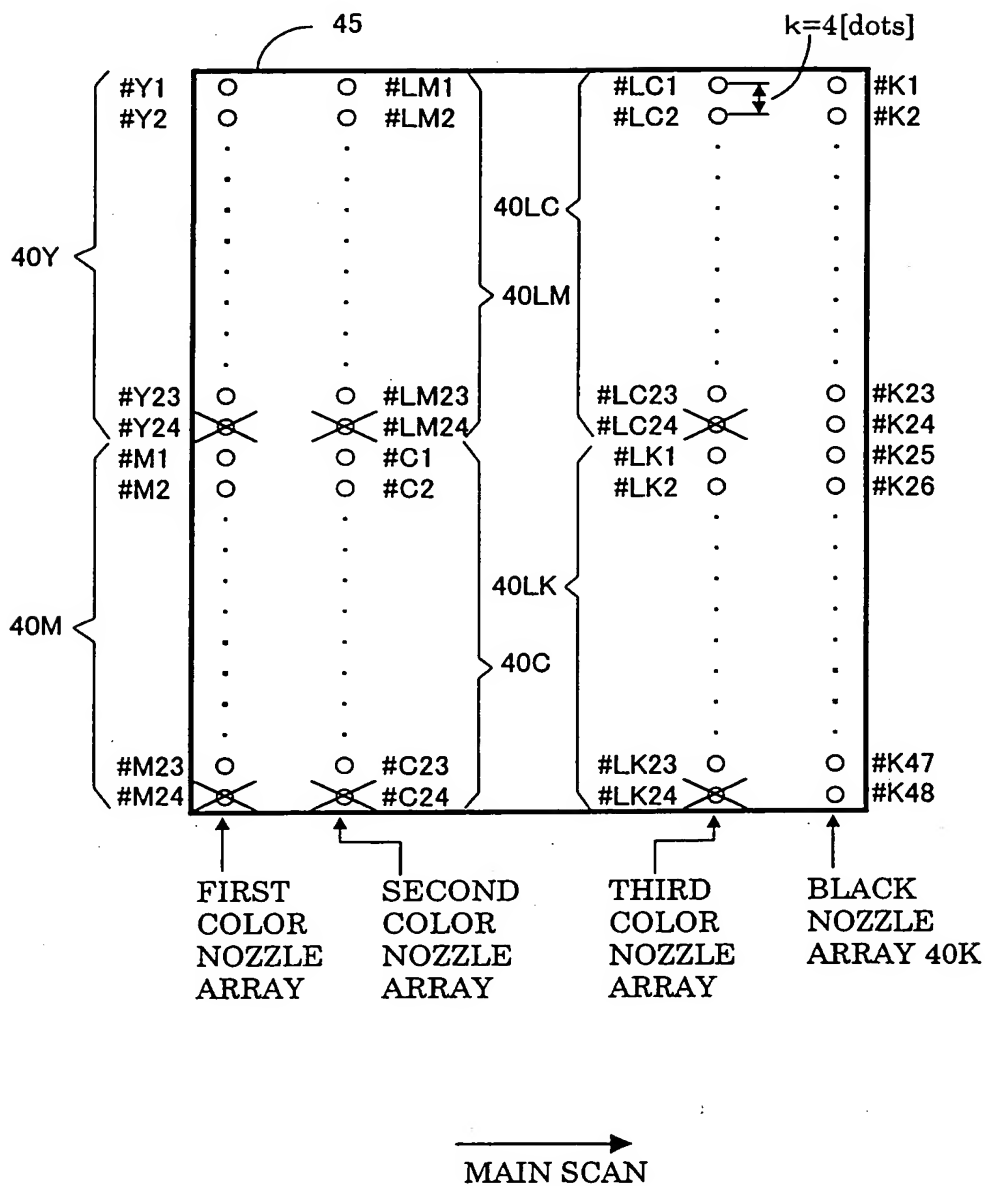


Fig. 21

FIFTH ACTUATOR VARIATION



## SIXTH ACTUATOR VARIATION

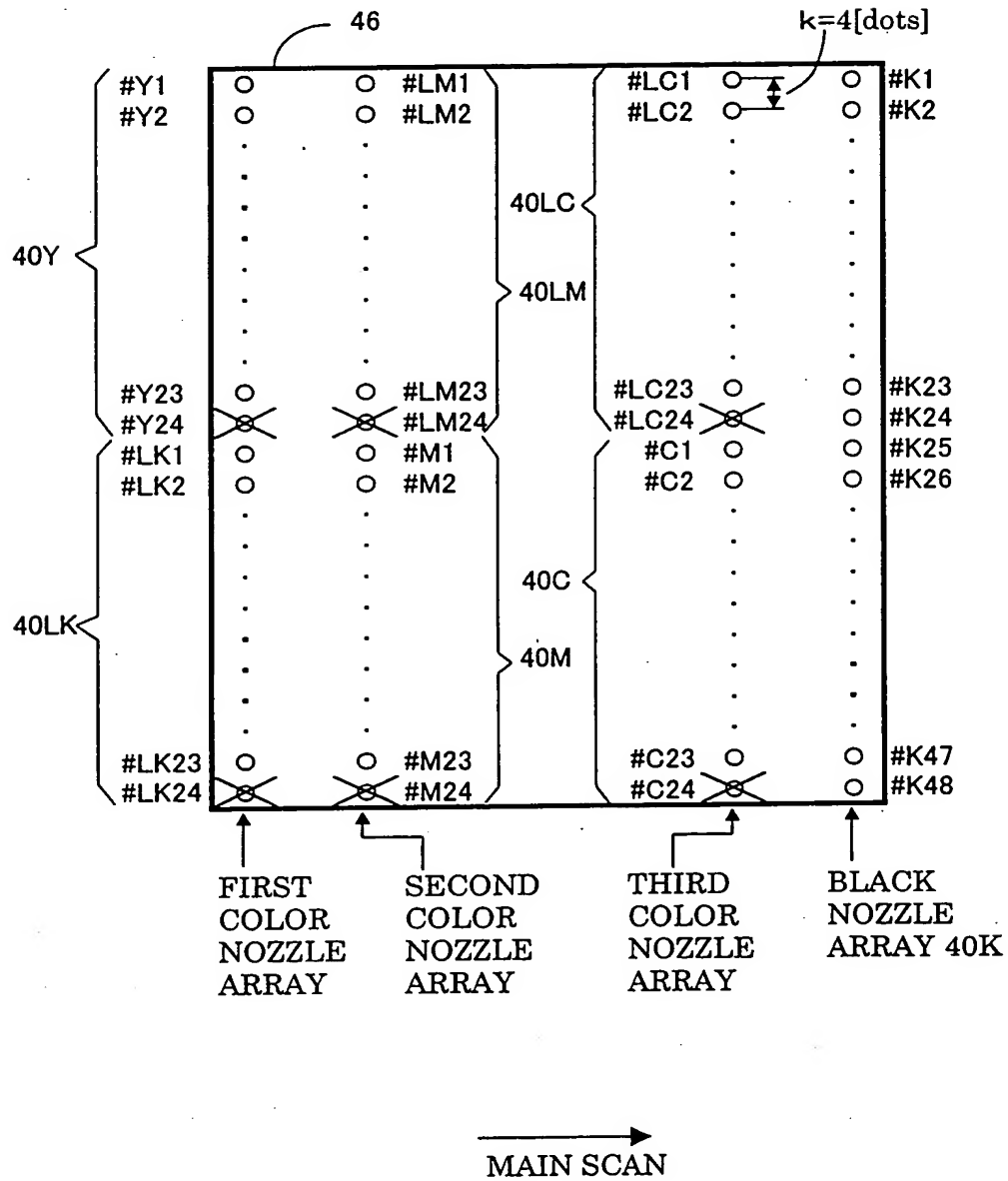


Fig. 23

SEVENTH ACTUATOR VARIATION

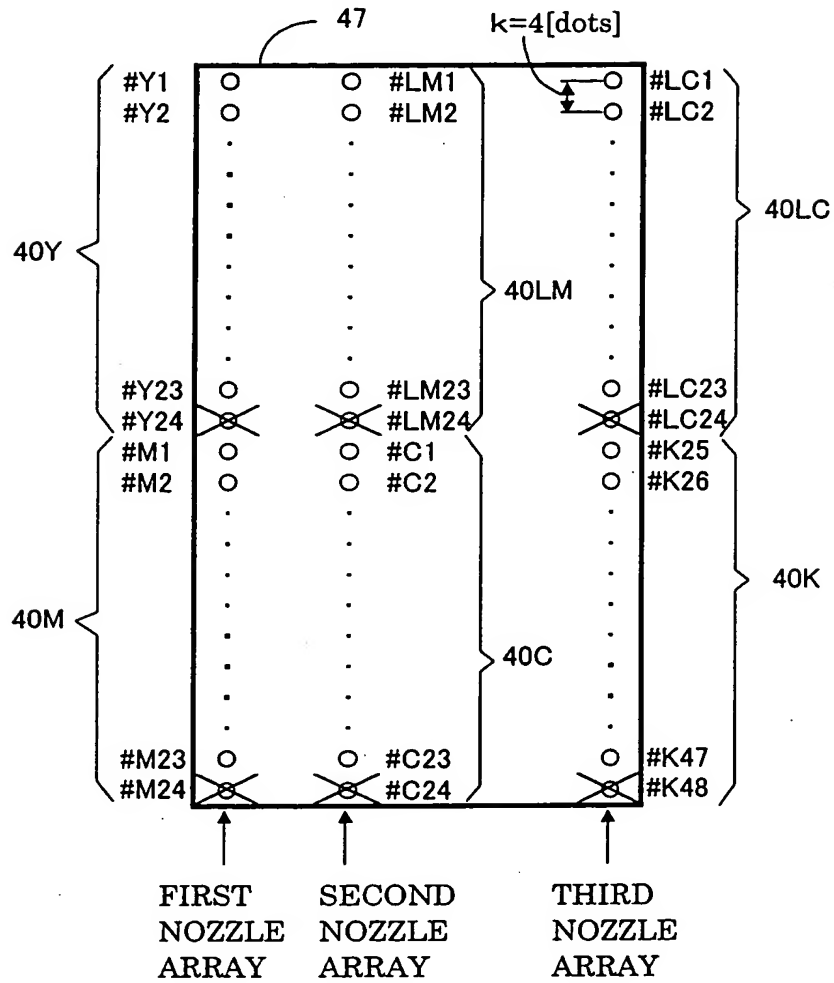


Fig. 24

EIGHTH ACTUATOR VARIATION

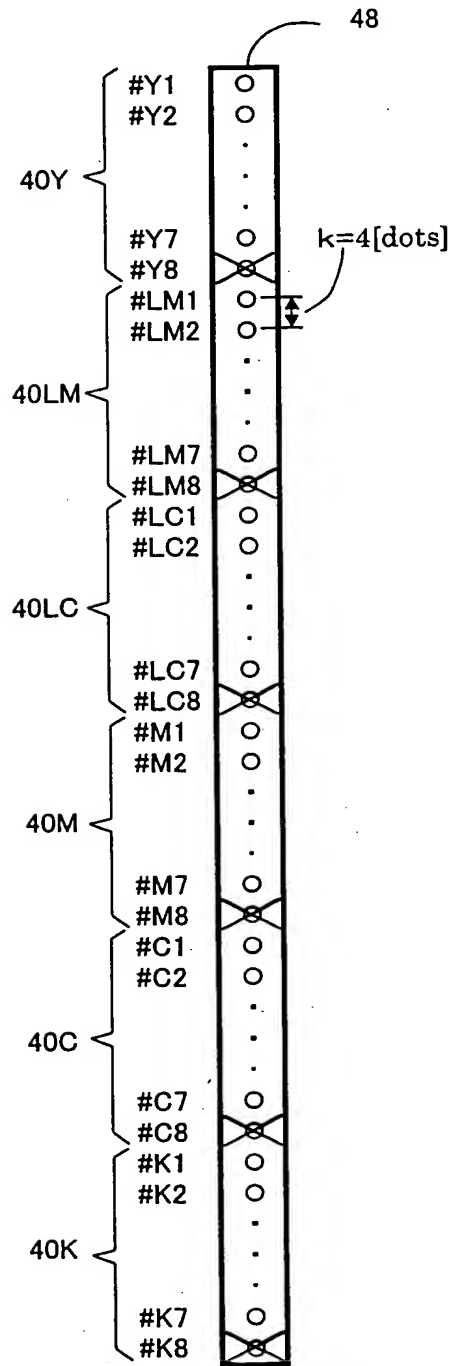


Fig. 25

INTERLACE SCHEME

NUMBER OF NOZZLES :  $N = 3$   
 NOZZLE PITCH :  $K = 2$  [DOTS]  
 NUMBER OF SCAN REPEATS :  $s = 1$   
 NOZZLE DENSITY :  $D$  [DOTS/INCH]  
 SUB-SCANNING PITCH :  $L$  [INCH]  
 DOT PITCH :  $W$  [INCH]

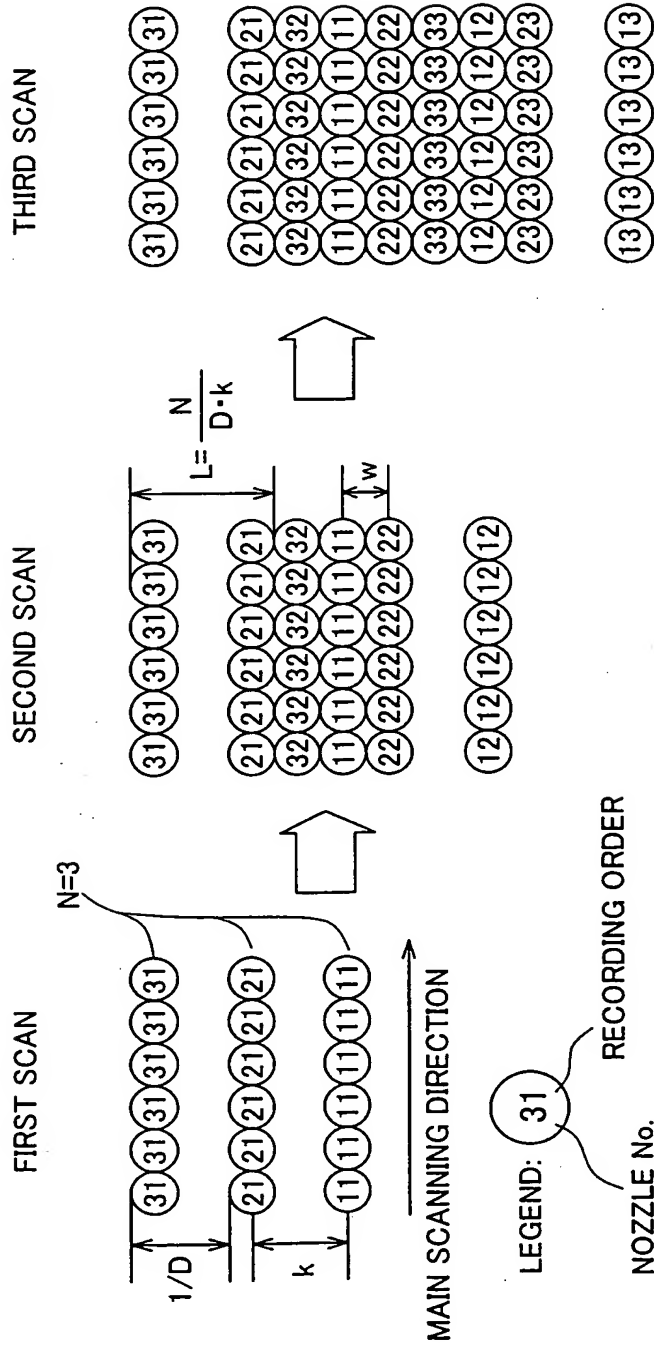
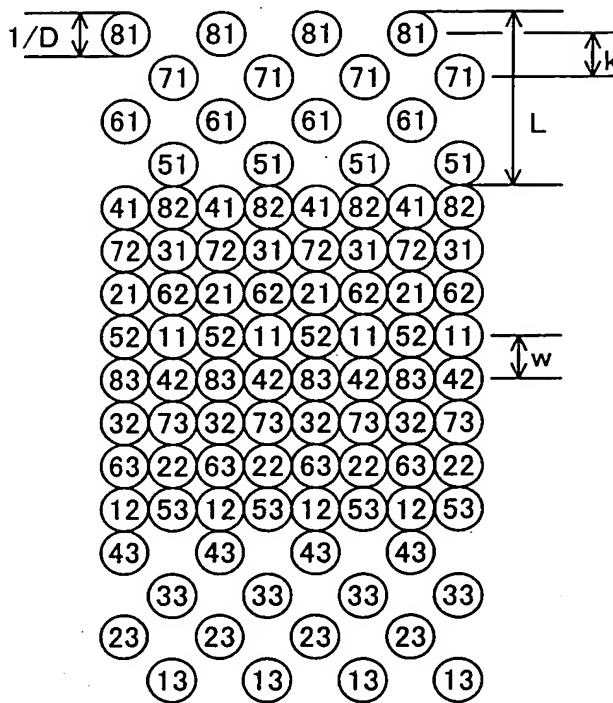


Fig. 26

OVERLAP SCHEME



NUMBER OF NOZZLES :  $N = 8$   
 NOZZLE PITCH :  $k = 1$  [DOTS]  
 NUMBER OF SCAN REPEATS :  $s = 2$   
 NOZZLE DENSITY :  $D$  [DOTS/INCH]  
 SUB-SCANNING PITCH :  $L$  [INCH]  
 DOT PITCH :  $w$  [INCH]

